DDR

User's Guide

ND040012E

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ND040012E Version: 1.1 Date: 25.09.2009 17:06:00

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Newcon Data AB
Flottiljgatan 61
S-721 31 Västerås, Sweden

Phone:	**+46 21 800303**
Fax:	**+46 21 800304**
Technical Support:	**tessem@newcon.se**
Company web site:	http://www.newcon.se/
Product web site:	http://www.tessem.nu/

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1 Introduction

1.1 Purpose

The purpose of this document is to give an overview of the product ***DDR*** **(D**isk **D**rive **R**eplacement) which is a replacement for the old 5.25" floppy disk drives DSMD 113 and DSMD 110 used in the ABB automation systems. The product uses a flash memory for storage (SD card). An installed DDR will be handled as a normal floppy disk drive by the automation system.

This document shall also be an aid for users when use and install the ***DDR*** product.

1.2 References

1.2.1 Documents

Document	**Identity**	**Version**
SDBackup Release Notes	ND040013E	1.0
ABB MasterView 850/1 User's Manual	7650 129-201	

1.2.2 General

This document is valid for the ***DDR*** of type NDDD 001 and NDDD 002.

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2 General Description

This document describes the product ***DDR*** **(D**isk **D**rive **R**eplacement) which is a replacement for the old 5.25-inch floppy disk drives DSMD 113 and DSMD 110 used in the ABB automation systems. The product uses a flash memory for storage (SD card). An installed DDR will be handled as a normal floppy disk drive by the automation system.

The product ***DDR*** is fully compatible with ABB automation system using the DSMD 113 and DSMD 110 floppy disk drive, for example the MasterView product family 810/830/850 and also MasterPiece 200, MasterAid 214/215 and TESSELATOR 8400/9800. The unit can also be used in a standard PC and MasterAid 220.

Figure 1 The ***DDR*** *unit of type NDDD 002 mounted in a MasterView 830 cabinet.*

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2.1 Overview

The following ***DDR*** products are available:

- **NDDD 001**, a circuit board mounted unit for 19-inch rack.
- **NDDD 002**, a frame mounted unit for small cabinet.
- **SDBackup**, a PC software product for backups of the SD memory card directly to a PC hard drive.

NDDD 001

The ***DDR*** unit of type **NDDD 001** replaces the floppy disk drive DSMD 113, the entire circuit board, used in for example the standard MasterView 850 or 19-inch rack based MasterView 810/830. The DDR unit is mounted on a 19-inch circuit board.

NOTE: Removing the old DSMD 113 unit and installing the new ***DDR*** unit can be done without switching the power off on the automation system.

*Figure 2 The **DDR** unit of type NDDD 001*

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NDDD 002

The ***DDR*** unit of type **NDDD 002** replaces the floppy disk drive in for example a small cabinet based MasterView 810/830. The DDR unit is mounted on a frame.

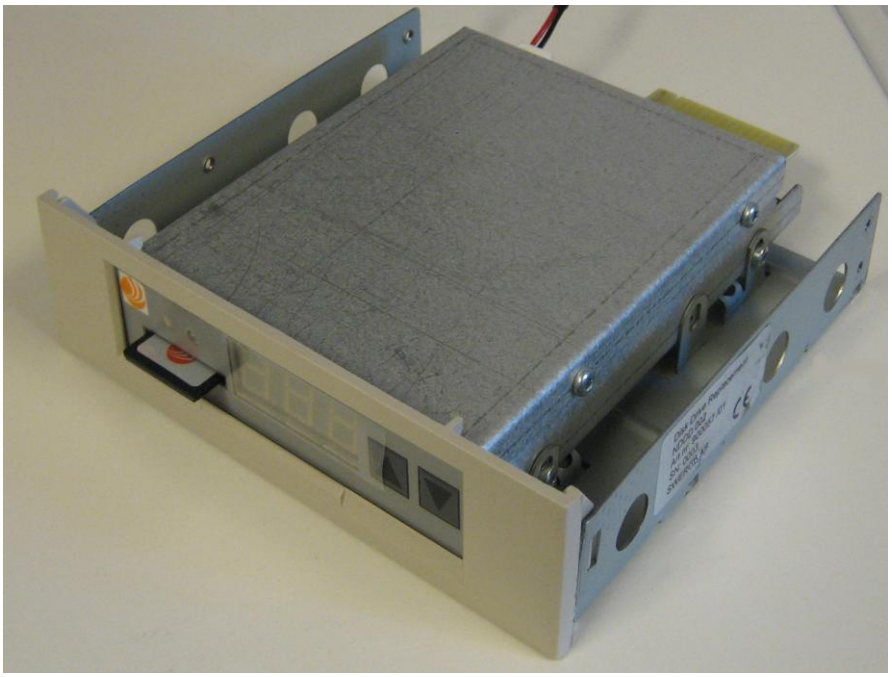

*Figure 3 The **DDR** unit of type NDDD 002*

SDBackup

The PC software product ***SDBackup*** allows easy backups of the SD memory card directly to a PC hard drive. The backup can later be restored to a SD memory card.

The product ***SDBackup*** works with any PC compatible SD card device handling 1 Gbyte SD memory card on Microsoft Vista/XP/2000.

The program reads data from the SD card and stores disks in the backup folders on the hard drive. The data can be later be restored to the SD card or copied to another SD card. The created files are on binary format, not possible to edit.

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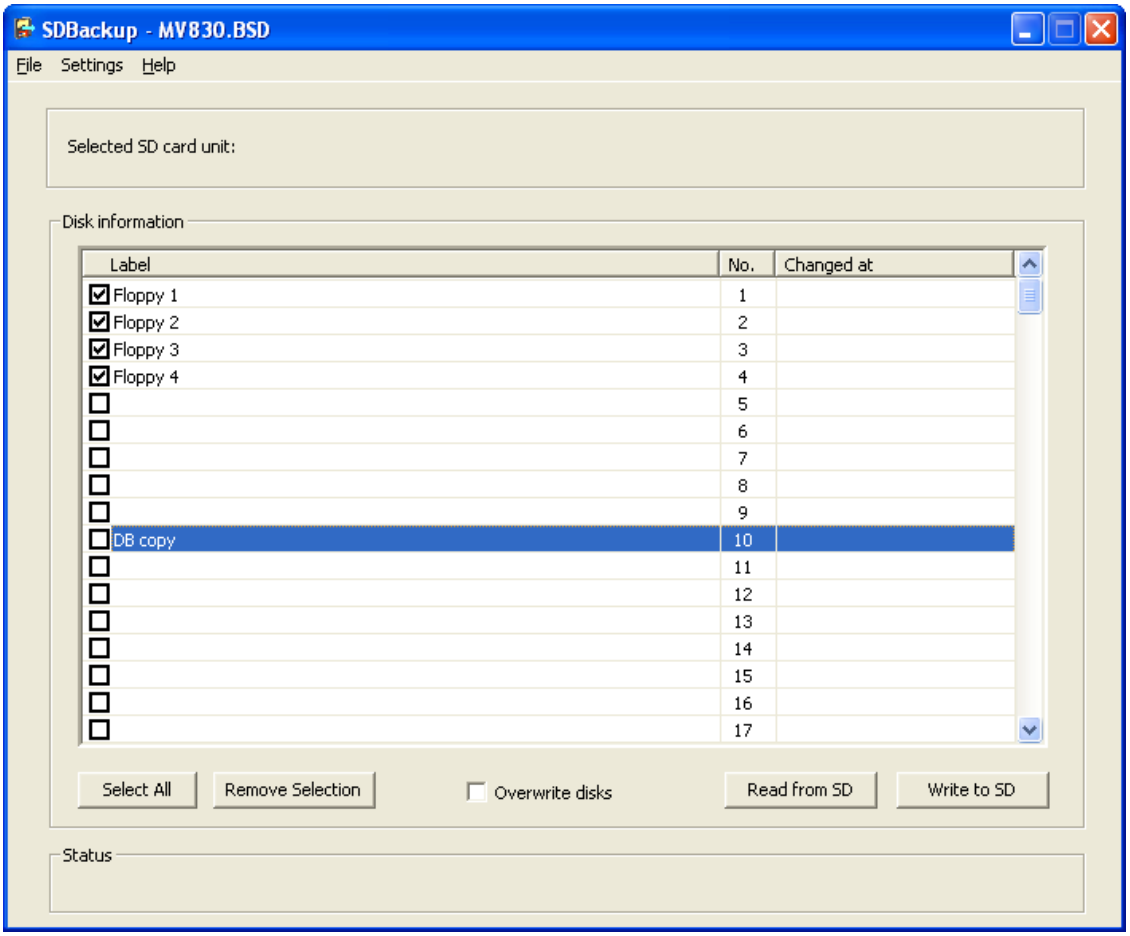

*Figure 4 The **SDBackup** software product.*

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3 The *DDR* Unit

3.1 Overview

The ***DDR*** unit uses a flash memory for storage (1 Gbyte SD memory card), mounted in the front of the unit. When installed, it will be handled as a normal disk drive. The SD memory card has the capacity of storing data corresponding to a maximum of 200 diskettes (1.44 MB format), with the "Active Disk" indicated on the display on the front of the unit.

NOTE: Changing SD memory card in the ***DDR*** unit can be done with the power on.

The built-in **Step Up** and **Step Down** buttons on the front of the ***DDR*** unit are used to change the "Active Disk". At power on or mounting a new SD card, disk 001 will always be activated. By pressing the **Step Up** and **Step Down** buttons simultaneous, disk 200 is selected. Keeping one of the buttons pressed increases the speed of selection.

On the front of the unit are also two LED's located, the **Status LED** and the **Busy LED**.

Status LED

The **Status LED** is indicating the operation status of the ***DDR*** unit. The following indications are present:

- **Green:** Indicates normal operation.
- **Red:** Indicates an error on the SD card or the ***DDR*** unit.

Busy LED

The **Busy LED** is indicating the access status of the ***DDR*** unit. The following indications are present:

- **On** (**Yellow**)**:** Indicates busy status. The ***DDR*** unit is busy at the moment for example by reading/writing information from/to the SD memory card.

- **Off :** Indicates ready status. The ***DDR*** unit is ready to send/receive information from the Automation system.

IMPORTANT: Do not ever make any floppy disk operations in the automation system, DUMP, LOAD etc, when **Busy LED** is **On**!

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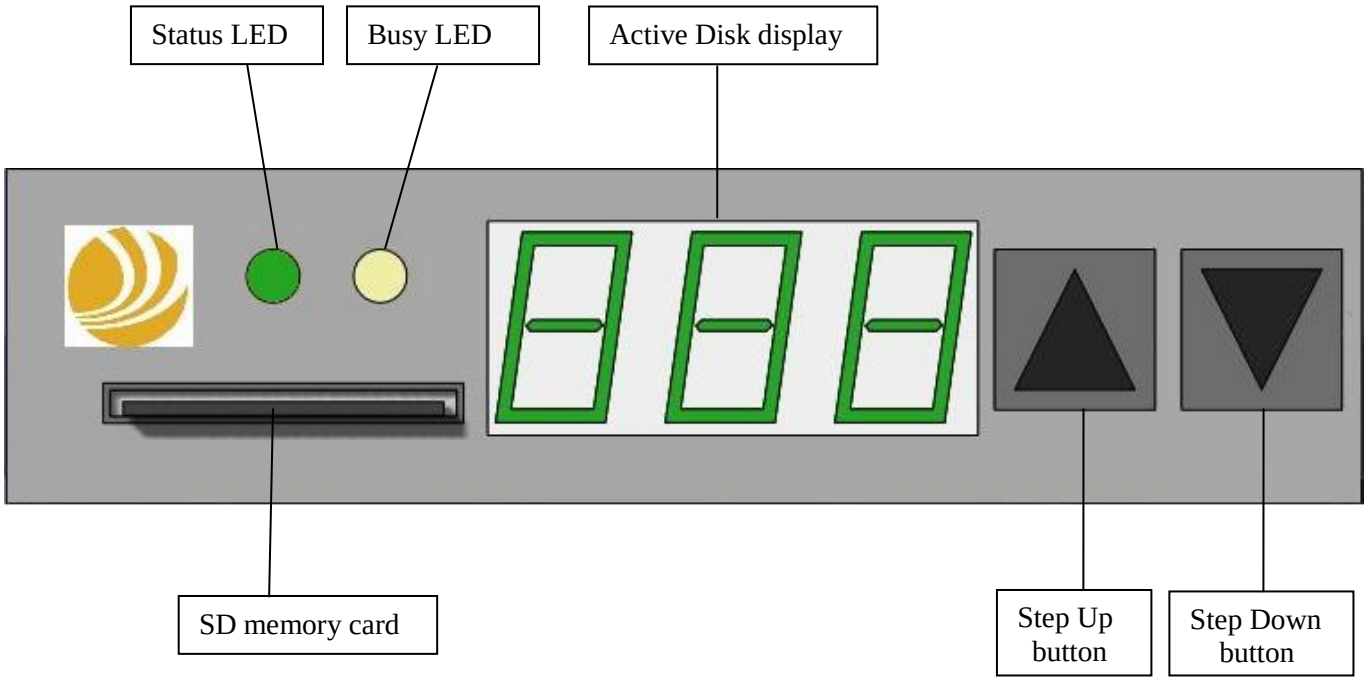

*Figure 5 The front of the **DDR** unit.*

3.2 Memory Handling

The ***DDR*** unit uses the following two types of memories:

- **SD card memory:** Stores permanent data on maximum 200 disks. Each disk represents a floppy disk in the Automation system.

- **RAM memory:** The built-in RAM in the ***DDR*** unit is loaded with data from the "Active Disk" on the SD card:
  - When a ***DDR*** disk is activated with the step buttons.
  - When mounting the SD card.
  - At power on.

The RAM memory is the working memory. No disk operations can be handled correctly before the RAM is loaded and **Busy LED** on the ***DDR*** unit is **Off**. When data in the automation system is written to the ***DDR*** it will first pass through the RAM memory and then be written to the SD card.

IMPORTANT: Remember not to force any operations, always wait until the **Busy LED** on the ***DDR*** unit is **Off** before performing next step!

NOTE: It takes around 30 seconds to transfer the data from/to the SD card. During this operation the **Busy LED** on the ***DDR*** unit is **On** (Yellow).

NOTE: The position of the write-protect switch on the SD card is not detected by the ***DDR*** unit. The SD card is always writable!

NOTE: The SD card cannot be read directly by any PC, because there is no file system present on the card. A special program ***SDBackup*** has to be used to make backup images on the PC. See section 4.

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NOTE: Never format the SD card in a PC before using it in the ***DDR*** unit!

3.3 Connections

3.3.1 The NDDD 002 Unit

Mount the signal interface adaptor on the DDR unit according to the Figure *6*.

NOTE: The position of the yellow dot on the interface adaptor and on the ***DDR*** unit!

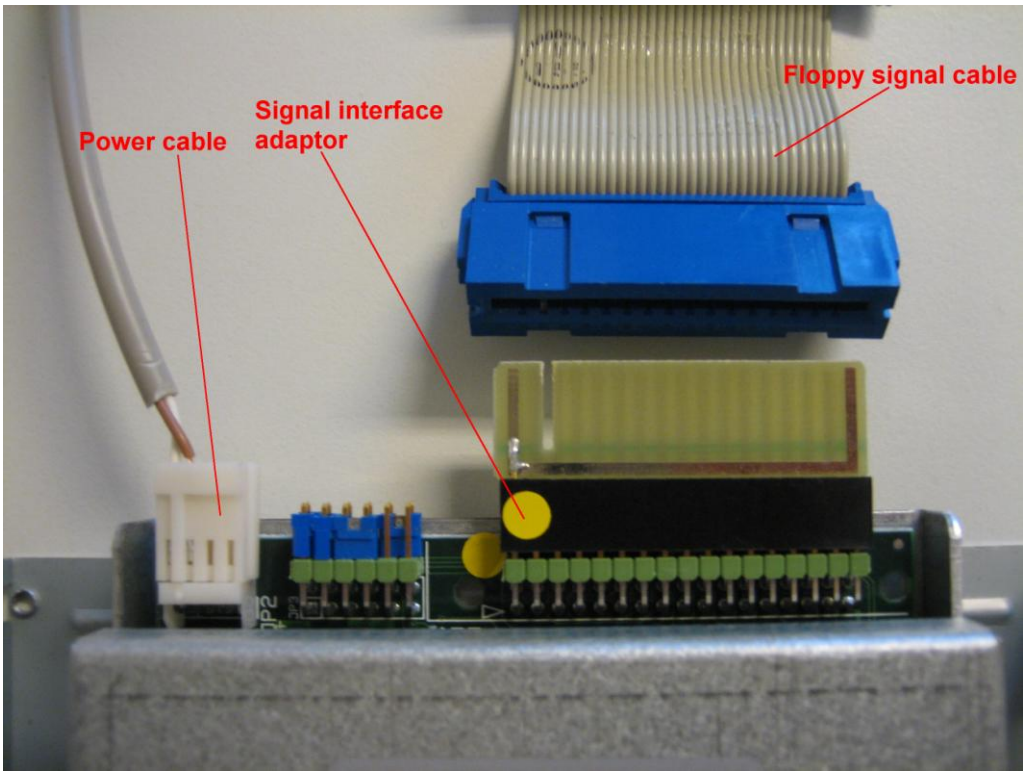

Figure 6 ***DDR*** *connections for unit of type NDDD 002.*

3.4 Strapping

The Figure 7 shows the strapping of the ***DDR*** unit when used in an ABB MasterView 810/830/850 system, default at delivery.

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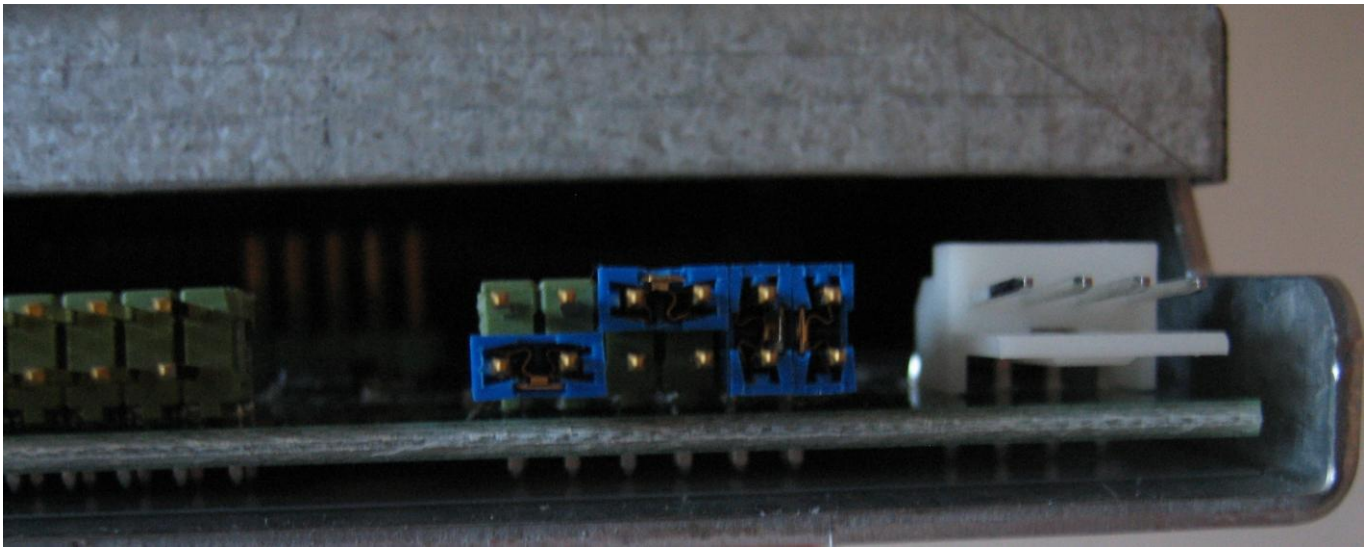

Figure 7 ***DDR*** *strapping for use in ABB MasterView*

The Figure 8 shows the strapping of the ***DDR*** unit when used in a PC (MasterAid 220).

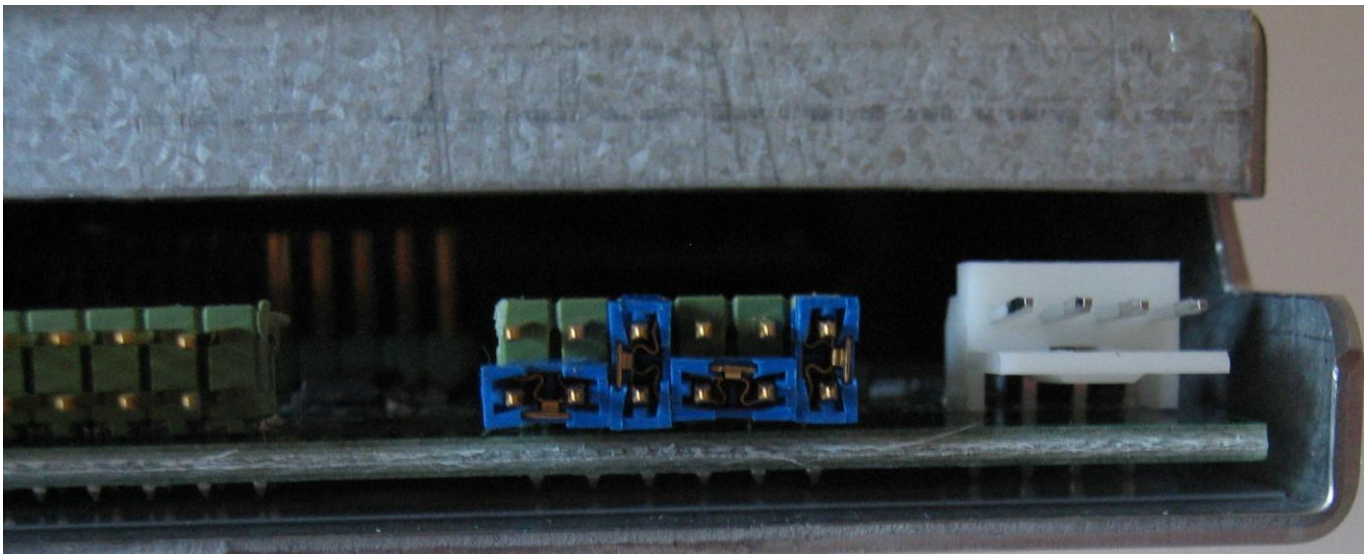

Figure 8 ***DDR*** *strapping for use in PC.*

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3.5 NDDD 001 - Installation and Operation

We recommend the procedure described in step 1 – step 5 below, to transfer the system information from floppy disks used in a 19-inch based automation system, for example a MasterView 850, to a SD card using the ***DDR*** of type **NDDD 001**.

NOTE: The ***DDR*** unit can also, as an option, be delivered with a pre-programmed SD memory card containing a copy of the MasterView system software and data from your 5.25-inch floppy disks!

CAUTION: Be very carefully when performing operation inside the MasterView rack with the power on!

1. Switch the system power on.

2. Load the MasterView system information from the 5.25-inch floppy disks using the LOAD button on the DSPC 171 CPU board.

3. Carefully remove the old DSMD 113 floppy unit from the 19-inch rack with the system power on, see Figure 9. Do not touch any other circuit boards in the rack!

Figure 9 Remove the old DSMD 113 unit from the MasterView rack.

4. Gentle insert the new **NDDD 001** circuit board with the ***DDR*** unit into the 19-inch rack with the system power on, see Figure 10. Do not touch any other circuit boards in the rack! The **Status LED** on the ***DDR*** unit shall be **On** (Green). Wait until the **Busy LED** on the ***DDR*** unit is **Off** (approx. 30 sec).

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Figure 10 Insert the new NDDD 001 circuit board to the MasterView rack.

5. The ***DDR*** unit is now ready to use. Use the **Step Up** and **Step Down** buttons on the ***DDR*** unit to select the "Active Disk". Use the LOAD and DUMP buttons on the DSPC 171 CPU board to perform the system load or dump operations!

IMPORTANT: Remember not to force any operation always wait until the **Busy LED** is **Off** before performing next step! So when storing information on the SD card it can take up to 30 seconds until the ***DDR*** is ready for the next step of the operation after that the STATUS display on the DSPC 171 CPU has indicated to take the step, see Figure 11.

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Figure 11 The NDDD 001 unit is busy.

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3.6 NDDD 002 - Installation and Operation

We recommend the procedure described in step 1 – step 11 below, to transfer the system information from floppy disks used in a small cabinet based automation system, for example a MasterView 810/830, a SD card using the ***DDR*** of type **NDDD 002**.

NOTE: The ***DDR*** unit can also be delivered with a pre-programmed SD memory card containing a copy of the MasterView system software and data from your 5.25-inch floppy disks!

NOTE: The information in a running MasterView 810/830 system can be stored on a SD card without switching the power off on the MasterView system, if the ***DDR*** unit is using an external power supply not located in the MV810/830 system! Useful if the old 5.25-inch floppy disk drive is broken! Step 1 & 3, described below, can then be made later when the information has been stored on the SD card!

CAUTION: Be very careful when performing operation inside the MasterView cabinet with the power on!

1. Mount the signal interface adaptor on the DDR unit, see section 3.3.1.
2. Switch the system power off.
3. Remove the covering side plates on the MasterView cabinet.
4. Connect the power cables of the new ***DDR*** unit to the screw terminals according to Figure 12.

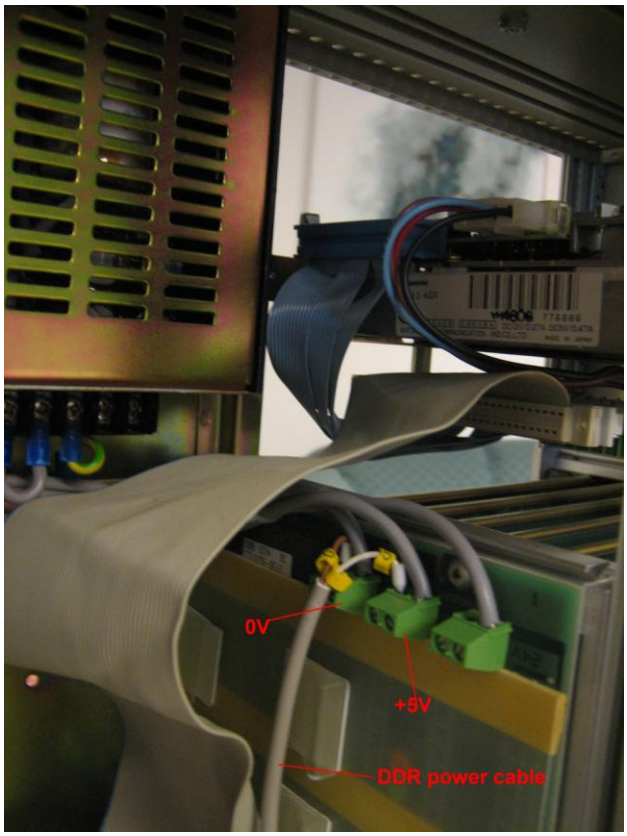

Figure 12 The 0V and +5V power screw terminals in the MasterView cabinet.

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5. Switch the system power on.

6. Load the MasterView system information from the floppy disks using the LOAD button on the DSPC 171 CPU board.

7. Remove the power cable and the signal cable from the old DSMD floppy unit in the MasterView 810/830 unit, see Figure 13.

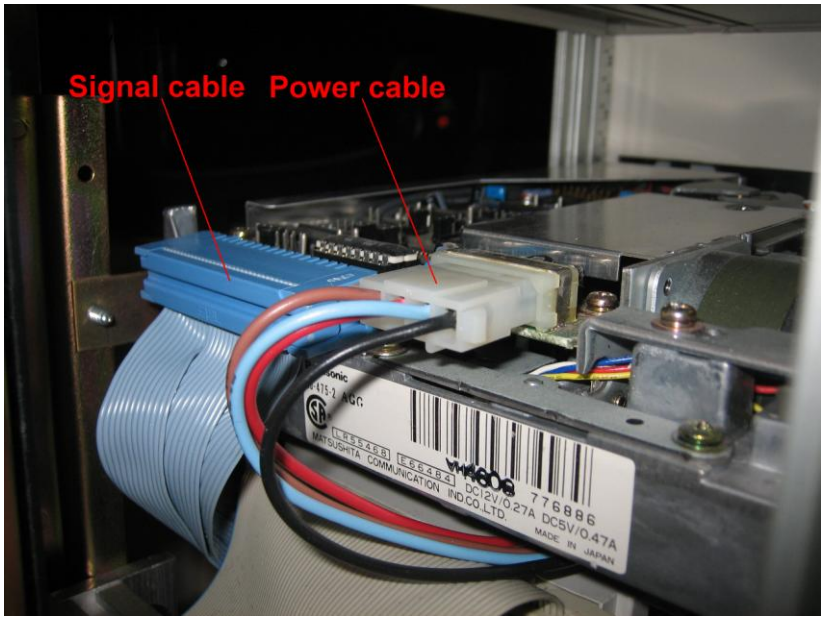

Figure 13 The cable connections to the old DSMD floppy unit in the MasterView cabinet.

8. Remove the old DSMD floppy unit.

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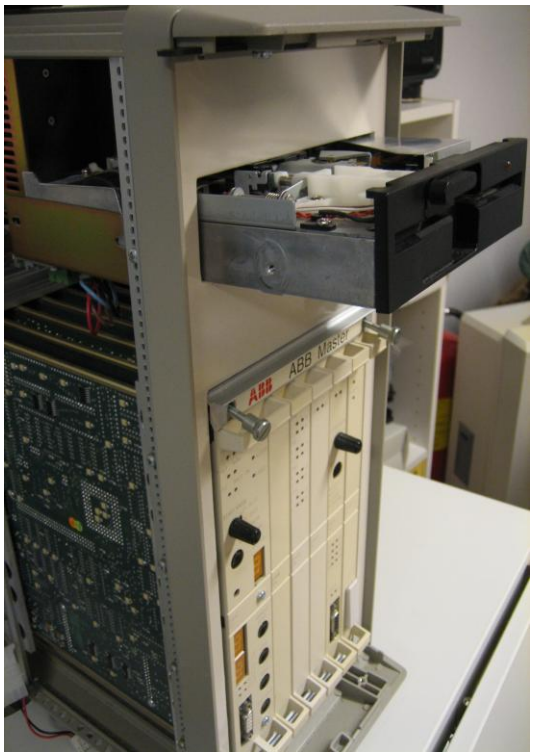

Figure 14 Remove the old DSMD floppy unit in the MasterView cabinet.

9. Mount the ***DDR*** unit inside the MasterView system.

10. First, connect **only** the power cable, see step 3, to the ***DDR*** unit according to Figure 15. The **Status LED** on the ***DDR*** unit shall be **On** (Green). If not check the power cables, see step 3. Wait until the **Busy LED** on the ***DDR*** unit is **Off** (approx. 30 sec).

*Figure 15 Connect the power cable to the **DDR** unit.*

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11. Second, connect the signal cable to the ***DDR*** unit according to Figure 16. If the **Busy LED** on the ***DDR*** unit is **On** (Yellow), the signal cable is incorrectly connected! Turn the contact to the other direction!

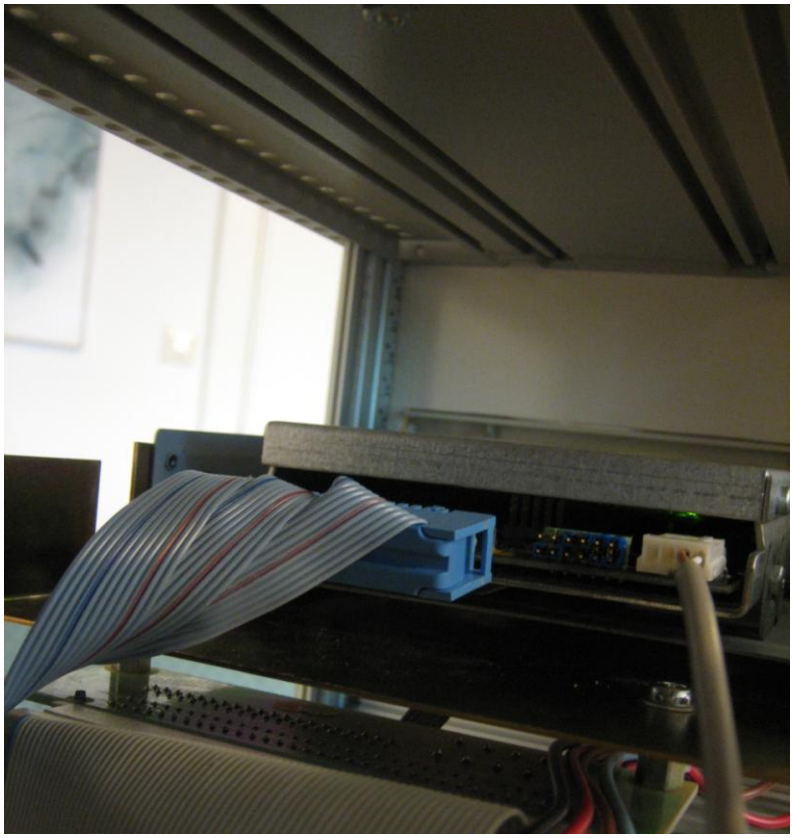

*Figure 16 Connect the signal cable to the **DDR** unit.*

12. The ***DDR*** unit is now ready to use. Use the **Step Up** and **Step Down** buttons on the ***DDR*** unit to select the "Active Disk". Use the LOAD and DUMP buttons on the DSPC 171 CPU board to perform the system load or dump operations!

IMPORTANT: Remember not to force any operation always wait until the **Busy LED** is **Off** before performing next step! So when storing information on the SD card it can take up to 30 seconds until the ***DDR*** is ready for the next step of the operation after that the STATUS display on the DSPC 171 CPU has indicated to take the step, see Figure 17.

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Figure 17 The NDDD 002 unit is busy.

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4 Backup of SD Memory Card

The PC software product ***SDBackup*** is available as an option to the ***DDR*** unit, which allows easy backups of the SD memory card directly to a PC hard drive. The backup can later be restored to a SD memory card.

The software product ***SDBackup*** runs on a standard PC under the Microsoft Windows Vista, Windows XP or Windows 2000 operating systems. The program works with any PC compatible SD card device handling 1 Gbyte SD memory cards.

SDBackup reads data from SD cards and stores "diskettes" in the backup folders on the hard drive. The data can later be restored to the SD card or copied to another SD card. The created files are on binary format, not possible to edit.

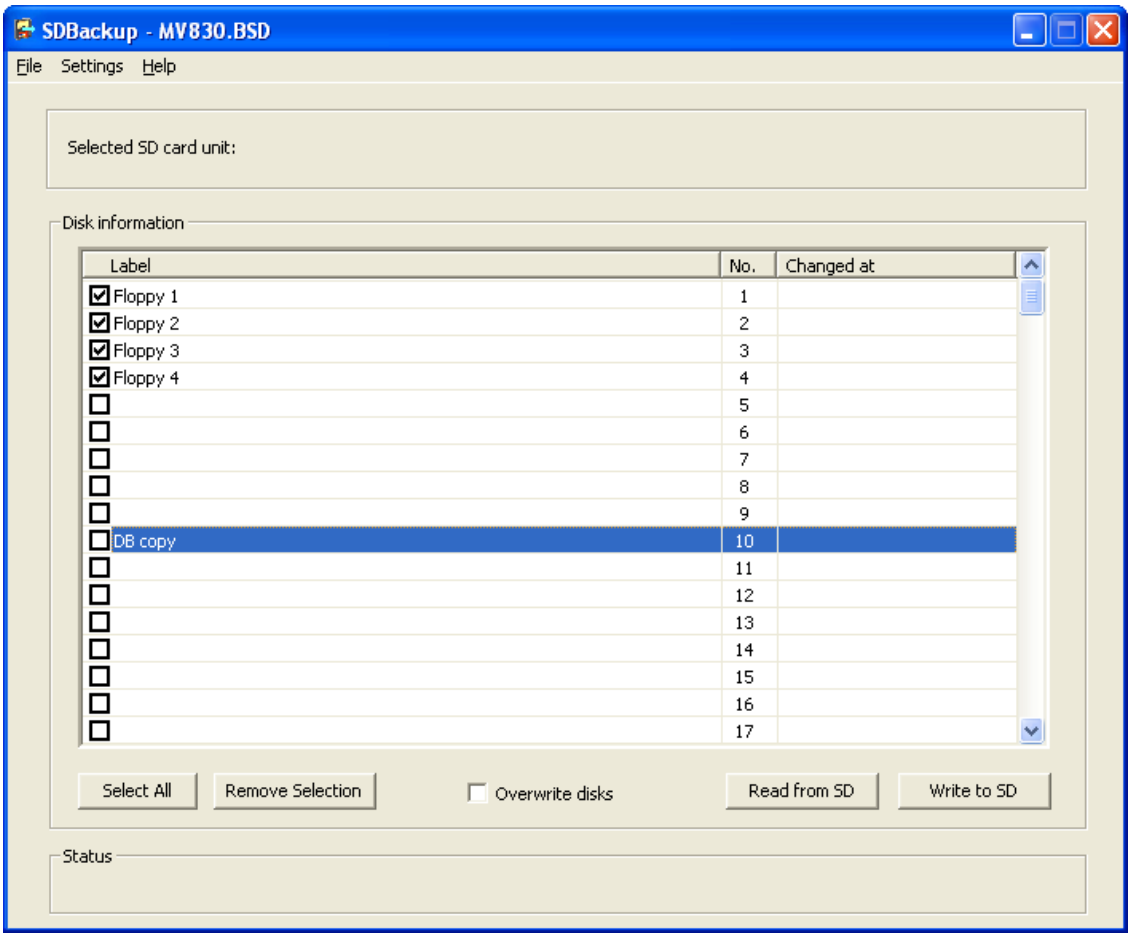

*Figure 18 The **SDBackup** software.*

For information about how to install the ***SDBackup*** program, see the ***SDBackup*** Release Notes. The document can be downloaded from our product web site at, http://www.tessem.nu, see the Download section.

For more detailed information about how to use the ***SDBackup*** program, see the built-in **Help Application** or more.

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5 Troubleshooting

5.1 The ***DDR*** Unit (NDDD 001 and NDDD 002)

This section describes some possible error situations and guidelines how to solve the problem.

- The **Status LED** on the ***DDR*** unit NDDD 002 is **Off**?
  Check the power cables, see section 3.6
- The **Status LED** on the ***DDR*** unit NDDD 001 is **Off**?
  Check if the circuit board is correctly inserted in the 19-inch rack. Correct slot and that the X2 contact is connected to the disk drive controller board, DSMC 112, see section 3.5.
- When connecting the signal cable to the ***DDR*** unit NDDD 002 the **Busy LED** is **On** (Yellow)?
  The signal cable is incorrectly connected! Turn the contact to the other direction!
- When inserting the ***DDR*** unit NDDD 001 in the 19-inch rack the **Busy LED** is **On** (Yellow)?
  Check that the X2 contact is connected to the disk drive controller board, DSMC 112, see section 3.5.
- The CPU board in the automation system (DSPC 171) indicates an error code on the display rather than next floppy disk number at LOAD or DUMP operation?
  Check that the ***DDR*** unit is ready to send/receive information from the automation system; the **Busy LED** is **Off** when the operation starts! Repeat the LOAD or DUMP operation.

5.2 The ***SDBackup*** Software Product

This section describes some possible error situations and guidelines how to solve the problem.

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6 How to Report Errors

6.1 The ***DDR*** Unit (NDDD 001 and NDDD 002)

If an error is detected should you generate a written report as soon as possible! Please be as specific as you can be about the problem you are experiencing; what kind of error, its nature and the circumstances when it was discovered. Serial number, system configuration, photo, and description of the command sequences related to the error should, if possible, be included in the report.

The following information is required when reporting errors:

- System Problem Report (SPR) describing the problem.
  An empty template (**DDRSPR.doc**) can be downloaded from our product web site at, http://www.tessem.nu, see the Download section.
- Photo of the faulty unit, system installation etc.

Send a mail with all the necessary information to Technical Support at tessem@newcon.se

6.2 The ***SDBackup*** Software Product

If an error is detected should you generate a written report as soon as possible! Please be as specific as you can be about the problem you are experiencing; what kind of error, its nature and the circumstances when it was discovered. System messages, printouts, screen dumps related to the error should, if possible, be included in the report.

The following information is required when reporting errors:

- System Problem Report (SPR) describing the problem.
  An empty template (**SDBackupSPR.doc**) is included in the folder:

  "…\SDBackup"

- Hardcopy or screen dumps of the program window and any eventually presented dialog boxes.

Send a mail with all the necessary information to Technical Support at tessem@newcon.se

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7 Technical data

7.1 The ***DDR*** Unit

7.1.1 Technical Specification

Part number	900057
Interface	34 pin floppy interfaces
Capacity	200 x 1.44Mbyte (HD format disk) diskettes
Environmental	Operating temperature 8 C – 50 C
Dimensions	143 x 103 x 27mm
Weight	0,5 kg
Power Voltage	DC 4,6 to 5,3 V
Typical Current Consumption	300 mA
System Requirements	ABB MasterView 810/830/850
Warranty	One-year limited
Supported SD Memory Cards	1 Gbyte SD card, part no. 900054. Each DDR unit is delivered with one SD card.

7.2 The ***SDBackup*** Software Product

7.2.1 General Software and Hardware Requirements

The ***SDBackup*** runs on any PC capable of supporting the Microsoft Windows Vista, Windows XP or Windows 2000 operating system. The ***SDBackup*** product requires the following:

- **Operating system:**
  - Windows Vista, Service Pack 1.
  - Windows XP Professional or Home Edition, Version 2002, Service Pack 1 or 2.
  - Windows 2000, Version 5.00.2105, Service Pack 2, 3 or 4.
- **PC equipment requirements:** Standard requirements for Windows Vista, Windows XP or Windows 2000. The ***SDBackup*** product itself requires around 8 MB RAM.
- **SD card device:** Capable to handle 1 Gbyte SD memory cards.

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